

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.: 09/918,377
Appellant: Ratcliff et al
Filed: 07/30/2001
TC/AU: 2644
Examiner: Tran

Confirmation No.: 9994

Docket: TI-33115
Cust.No.: 23494

APPEAL BRIEF (reinstated appeal)

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellant's Appeal Brief; this brief is pursuant to MPEP 1204.01 (Reinstatement of Appeal) and the Notice of Appeal filed in response to the Office Action mailed 02/02/2007. The fee for filing a brief in support of the appeal has previously been paid; but the Director is hereby authorized to charge any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668.

Respectfully submitted,

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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-19 are pending in the application with all claims finally rejected. This appeal involves the finally rejected claims 1-19.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment to the claims after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The independent claims on appeal consist of machine claim 1, device claim 7, device claim 13, and method claim 18.

The subject matter of claim 1 is an audio processing machine with a plurality of audio inputs (application page 6, line 24; FIG.1, 16-21); a plurality of audio outputs (application page 6, line 24-25; FIG.1, 22-25, 27, and 29); a plurality of audio filters (application page 7, line 12; FIG.3, 40); a plurality of audio processing channels (application page 7, lines 6-7; FIG.2, 32); and a plurality of multiply switches (application page 6, line 26; FIG.1, 11,13) configured to selectively mix the plurality of audio inputs and the plurality of audio outputs such that audio signals passing through the plurality of audio inputs are processed via a plurality of audio filters selected from the plurality of audio filters and a plurality of audio processing channels selected from the plurality of audio processing channels to generate at least one desired audio output signal (application page 2, lines 24-28; page 6, lines 23-28; FIG.1, 12,14).

The subject matter of claim 7 is an audio processing device with means for receiving a plurality of audio input signals (application page 6, line 24; FIG.1, 16-21), means for generating a plurality of audio output signals (application page

6, lines 3-28; FIG.1); means for filtering the plurality of audio input signals to generate a plurality of filtered audio signals (application page 7, line 12; FIG.3, 40), means for processing the plurality of filtered audio signals to generate a plurality of processed audio signals (application page 7, lines 5-10; FIG.2, 30,32); and a plurality of multiply switches (application page 6, line 26; FIG.1, 13) configured to selectively mix a plurality of audio input signals selected from the plurality of audio input signals, a plurality of filtered audio signals selected from the plurality of filtered audio signals and a plurality of processed audio signals selected from the plurality of processed audio signals to generate at least one desired audio output signal (application page 2, lines 24-28).

The subject matter of claim 13 is an audio processing device having a plurality of multiply switches (application page 6, lines 25-26; FIG.1, 11,13) operational to selectively mix a plurality of audio input signals, a plurality of filtered audio signals generated therefrom the plurality of audio input signals and a plurality of processed audio signals generated therefrom the plurality of filtered audio signals to generate at least one desired audio output signal (application page 6, lines 23-28).

The subject matter of claim 18 is a method of processing an audio signal, the method comprising the steps of configuring a first plurality of multiply switches (application page 6, lines 25-26; FIG.1, 11), a second plurality of multiply switches (application page 6, line 31 to page 7, line 1; FIG.1, 26) and a third plurality of multiply switches (application page 6, lines 25-26; FIG.1, 13); mixing a plurality of audio input signals via the first plurality of multiply switches to generate a plurality of mixed audio signals (application page 6, lines 24-25, lines 27-28; FIG.1, 11); filtering the plurality of mixed audio signals to generate a first plurality of filtered audio signals (application page 7, lines 11-12; FIG.3 40); mixing the first plurality of filtered audio signals via the second plurality of multiply switches to generate to generate a second plurality of filtered audio signals (application page 6, line 31 to page 7, line 1; page 7, lines 12-14; FIG.1, 26); processing the second plurality of filtered audio signals to generate a plurality of processed audio signals (application page 7, line 25; FIG.3, 42,44); and mixing

the plurality of processed audio signals via the third plurality of multiply switches (application page 6, lines 26-28; FIG.1, 13) to generate at least one desired audio output signal.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

1. Claims 1, 6-7, 12-13, and 18 were rejected under 35 USC § 103(a) as being unpatentable over Moorer (USP 6,904,152) in view of Cooper et al. (USP 5,333,200).
2. Claims 2-3, 8-9, and 14-15 were rejected under 35 USC § 103(a) as being unpatentable over Moorer (USP 6,904,152) in view of Cooper et al. (USP 5,333,200) and further in view of Matheny et al. (USP 6,148,314).
3. Claims 5, 11, and 17 were rejected under 35 USC § 103(a) as being unpatentable over Moorer (USP 6,904,152) in view of Cooper et al. (USP 5,333,200) and further in view of Poss et al. (USP 6,151,179).
4. Claims 4, 10, 16, and 19 were rejected under 35 USC § 103(a) as being unpatentable over Moorer (USP 6,904,152) in view of Cooper et al. (USP 5,333,200) and further in view of Matheny et al. (USP 6,148,314) and further in view of Tang et al. (USP 6,298,370).

Rule 41.37(c)(1)(vii) Arguments

1. Claims 1, 6-7, 12-13, and 18 were rejected as unpatentable over Moorer in view of Cooper.

Claims 1, 6-7, 12-13, and 18: Independent claim 1 requires multiply switches to select filters and to select processing channels for input signals to generate output signal(s). In contrast, cited Moorer Figs. 3-7 and text disclose linear transformations of input signals from microphones to generate output signals for multiple channel recording (i.e., 5-channel surround sound); the linear transformations are implemented with variable gain amplifiers according to where the input from a microphone is to be “positioned” (apparent location to a listener playing back the recording with a surround sound speaker system). The circuitry

(i.e., processing channels) of Figs.3-7 does not change; rather, the gains are adjusted by solving linear equations for the positions (Moorer column 6, lines 35-62). Thus the gain amplifiers of Moorer do not suggest the selecting multiply switches of claim 1.

Further, Cooper Fig.6A was cited for filters 174,184 and combined with Moorer to meet the filter limitation of claim 1. However, the filters of Cooper are for crosstalk cancellation in a stereo (2-channel) playback system and are always used; there is no filter selection (by the multiply switches) as required by claim 1. Indeed, Cooper column 14, lines 6-7 note that Fig.6A is an implementation of Fig.1C; and Fig.1C shows recording from two microphones (152, 154) on an artificial head (151) (column 8, lines 15-28). Thus Cooper would not be considered by one of ordinary skill in the art with Moorer which employs multiple microphones (m1, m2, m3 of cited Fig.6a) at the sound sources and records multiple (e.g., 5) channels.

The Examiner noted independent claims 7, 13, and 18 had similar limitations as claim 1 and rejected these claims for the same reasons. Appellant likewise makes the claim 1 arguments for such rejections, and further relies upon the patentability of the independent claims for the patentability of the dependent claims 6 and 12.

2. Claims 2-3, 8-9, and 14-15 were rejected as unpatentable over Moorer in view of Cooper and Matheny.

Claims 2-3, 8-9, and 14-15: Appellant relies upon the patentability of base claims 1, 7, and 13.

3. Claims 5, 11, and 17 were rejected as unpatentable over Moorer in view of Cooper and Poss.

Claims 5, 11, and 17: Appellant relies upon the patentability of base claims 1, 7, and 13.

4. Claims 4, 10, 16, and 19 were rejected as unpatentable over Moorer in view of Cooper, Matheny, and Tang.

Claims 4, 10, and 16: Appellant relies upon the patentability of base claims 1, 7, and 13.

Rule 41.37(c)(1)(viii) Claims appendix

1. An audio processing machine comprising:
 - a plurality of audio inputs;
 - a plurality of audio outputs;
 - a plurality of audio filters;
 - a plurality of audio processing channels; and
 - a plurality of multiply switches configured to selectively mix the plurality of audio inputs and the plurality of audio outputs such that audio signals passing through the plurality of audio inputs are processed via a plurality of audio filters selected from the plurality of audio filters and a plurality of audio processing channels selected from the plurality of audio processing channels to generate at least one desired audio output signal.
2. The audio processing device according to claim 1 wherein the plurality of multiply switches are comprised of single-cycle multiply switches.
3. The audio processing device according to claim 1 wherein the plurality of multiply switches are comprised of programmable multiply switches.
4. The audio processing device according to claim 3 wherein the programmable multiply switches are reconfigurable on-the-fly.
5. The audio processing device according to claim 1 wherein the multiply switches are further configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through.
6. The audio processing device according to claim 1 wherein the plurality of audio filters comprise biquad filters.

7. An audio processing device comprising:
 - means for receiving a plurality of audio input signals;
 - means for generating a plurality of audio output signals;
 - means for filtering the plurality of audio input signals to generate a plurality of filtered audio signals;
 - means for processing the plurality of filtered audio signals to generate a plurality of processed audio signals; and
 - a plurality of multiply switches configured to selectively mix a plurality of audio input signals selected from the plurality of audio input signals, a plurality of filtered audio signals selected from the plurality of filtered audio signals and a plurality of processed audio signals selected from the plurality of processed audio signals to generate at least one desired audio output signal.
8. The audio processing device according to claim 7 wherein the plurality of multiply switches are comprised of single-cycle multiply switches.
9. The audio processing device according to claim 7 wherein the plurality of multiply switches are comprised of programmable multiply switches.
10. The audio processing device according to claim 9 wherein the programmable multiply switches are reconfigurable on-the-fly.
11. The audio processing device according to claim 7 wherein the multiply switches are further configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through.
12. The audio processing device according to claim 7 wherein the filtering means comprises a plurality of biquad filters.

13. An audio processing device having a plurality of multiply switches operational to selectively mix a plurality of audio input signals, a plurality of filtered audio signals generated therefrom the plurality of audio input signals and a plurality of processed audio signals generated therefrom the plurality of filtered audio signals to generate at least one desired audio output signal.
14. The audio processing device according to claim 13 wherein the plurality of multiply switches comprise single-cycle multiply switches.
15. The audio processing device according to claim 13 wherein the plurality of multiply switches comprise programmable multiply switches.
16. The audio processing device according to claim 15 wherein the programmable multiply switches are reconfigurable on-the-fly.
17. The audio processing device according to claim 13 wherein the multiply switches are configured to generate a first logic signal to open a conductive path, a second logic signal to close the conductive path, and a third logic signal to open the conductive path while inverting a signal phase associated with an audio signal passing there through.
18. A method of processing an audio signal, the method comprising the steps of:
- a. configuring a first plurality of multiply switches, a second plurality of multiply switches and a third plurality of multiply switches;
 - b. mixing a plurality of audio input signals via the first plurality of multiply switches to generate a plurality of mixed audio signals;
 - c. filtering the plurality of mixed audio signals to generate a first plurality of filtered audio signals;

- d. mixing the first plurality of filtered audio signals via the second plurality of multiply switches to generate a second plurality of filtered audio signals;
- e. processing the second plurality of filtered audio signals to generate a plurality of processed audio signals; and
- f. mixing the plurality of processed audio signals via the third plurality of multiply switches to generate at least one desired audio output signal.

19. The method according to claim 18 further comprising the step of reconfiguring on-the-fly, at least one multiply switch selected from the first, second and third plurality of multiply switches and then repeating steps b-f.

Rule 41.37(c)(1)(ix) Evidence appendix

none

Rule 41.37(c)(1)(x) Related proceedings appendix

none